Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of:	)	
	)	
Amendment of Part 90 of the Commission's Rules	)	WP Docket No. 07-100
	)	
	)	
	)	

COMMENTS OF
THE NATIONAL PUBLIC SAFETY TELECOMMUNICATIONS COUNCIL

The National Public Safety Telecommunications Council (NPSTC) submits these Comments in response the Commission's Further Notice of Proposed Rulemaking ("Further Notice") in the above-captioned proceeding.[1] NPSTC recommends the Commission modify its proposal to require applicants to use the coordination procedures from Part 101 of the rules for 4.9 GHz fixed links, and instead provide for a registration procedure administered by the National Regional Planning Committee (NRPC) in conjunction with individual public safety 700 MHz regional planning committees (RPC's). Such a registration procedure will help public safety licensees to cooperate in selecting 4.9 GHz channels, is more compatible with the full variety of operations allowable at 4.9 GHz, including mobile, point-to-point and point-to-multipoint and speeds the ability of new licensees to deploy systems with minimal administrative burden. In addition, NPSTC supports the proposed rule corrections set forth in the Further Notice.

[1] *Report and Order and Further Notice of Proposed Rulemaking* in WP Docket No. 07-100, released April 9, 2009.

The National Public Safety Telecommunications Council

The National Public Safety Telecommunications Council (NPSTC) is a federation of public safety organizations whose mission is to improve public safety communications and interoperability through collaborative leadership. NPSTC pursues the role of resource and advocate for public safety organizations in the United States on matters relating to public safety telecommunications. NPSTC has promoted implementation of the Public Safety Wireless Advisory Committee (PSWAC) and the 700 MHz Public Safety National Coordination Committee (NCC) recommendations. NPSTC explores technologies and public policy involving public safety telecommunications, analyzes the ramifications of particular issues and submits comments to governmental bodies with the objective of furthering public safety telecommunications worldwide. NPSTC serves as a standing forum for the exchange of ideas and information for effective public safety telecommunications.

The following 15 organizations participate in NPSTC:

American Association of State Highway and Transportation Officials
American Radio Relay League
Association of Fish and Wildlife Agencies
Association of Public-Safety Communications Officials-International
Forestry Conservation Communications Association
International Association of Chiefs of Police
International Association of Emergency Managers
International Association of Fire Chiefs
International Municipal Signal Association
National Association of State Chief Information Officers
National Association of State Emergency Medical Services Officials
National Association of State Foresters
National Association of State Technology Directors
National Emergency Number Association
National Sheriffs' Association

Several federal agencies are liaison members of NPSTC. These include the Department of Homeland Security (the Federal Emergency Management Agency, the Office of Emergency Communications, the Office of Interoperability and Compatibility, and the SAFECOM Program); Department of Commerce (National Telecommunications and Information Administration); Department of the Interior; and the Department of Justice (National Institute of Justice, CommTech Program). NPSTC has liaison relationships with associate members, the Telecommunications Industry Association and the Canadian Interoperability Technology Interest Group.

Cooperating in the Use of the 4.9 GHz Spectrum

When the 4.9 GHz licensing rules were originally adopted in 2003, the Commission provided licensees with authority to operate base and mobile units (including portable and handheld units) and operate temporary (1 year or less) fixed stations[2] Such operations are licensed on an area-wide basis in which each public safety licensee obtains a license for the entire 4.9 GHz band (4.94-4.99 GHz) within its jurisdictional area. Permanent fixed point-to-point stations were authorized only on a secondary, non-interference basis to base, mobile and temporary fixed operations and were required to be licensed on a specific site basis."[3] In the Report and Order released in April 2009, the Commission amended Section 90.1207 of the Commission's rules to grant primary status to stand-alone permanent fixed links that are used to deliver broadband service and permanent fixed links that connect 4.9 GHz base and mobile stations that are used to deliver broadband services, as well as other public safety networks using

[2] 47 C.F.R. §§ 90.1207(c).

[3] *Id.*

spectrum designated for broadband use. Under the revised rules, all permanent fixed point-to-point and point-to-multipoint stations must be licensed on an individual site-by-site basis.

In conjunction with these rule changes, the Commission issued a companion Further Notice of Proposed Rulemaking that addresses coordination procedures for primary fixed license applications. In the Further Notice, the Commission expressed concern that the requirements of Section 90.1209(b) may not ensure that applicants for primary permanent fixed stations offer sufficient protection to other primary permanent fixed stations and other co-primary users. Therefore, the Commission proposed to modify Section 90.1209(b) to require applicants for primary fixed stations providing point-to-point and point-to-multipoint communications to successfully complete the prior coordination procedures of Section 101.103(d), which govern coordination of fixed microwave stations. Specifically, the Commission proposed to modify the 4.9 GHz band rules in Part 90 to require that applicants for primary point-to-point and point-to-multipoint fixed stations "successfully complete the prior coordination procedures of Section 101.103 (d)" of the rules.[4]

Such prior coordination would require that applicants for 4.9 GHz permanent point-to-point or point-to-multipoint stations notify existing licensees with both administrative and technical information on the proposed operation and wait at least 30 days for a response before submitting an application.

NPSTC is certainly aware of the benefits that frequency coordination and planning has for public safety. Many of NPSTC's member organizations provide frequency coordination services for mobile public safety operations under Part 90 of the rules in bands below 1 GHz.

[4] *Further Notice* at paragraph 45.

These FCC-approved Frequency Advisory Committees accomplish such coordination efficiently and effectively using established engineering practices that are relevant to the operations being coordinated. This well-established process assists in cooperative use of the spectrum to the maximum extent possible, given the limited spectrum allocations available for public safety use.

Unfortunately, neither the text nor the proposed rules of the Further Notice provide an indication of what "successfully completing" the coordination procedure means. NPSTC is concerned that it could be interpreted to mean that if any existing licensee responds with an objection to an applicant's notification, then the applicant has not "successfully completed" the prior coordination. In any case, it appears that the process could impose much more than a 30 day delay in applying for and obtaining a license, as well as a substantial amount of work by individual public safety agencies to implement such prior coordination, including responding to any objections received.

Also, while the Further Notice is not specific as to what technical criteria would be used, NPSTC notes that the technical requirements for point-to-point microwave links in Part 101 are significantly different than those applicable to 4.9 GHz systems under part 90 of the rules. The technical rules for fixed microwave links under Part 101 of the rules require that fixed microwave links be deployed with a minimum antenna gain (typically 38dB) and a maximum beamwidth of a few degrees.[5] Accordingly, these fixed microwave links are highly directional links that can be represented as narrow paths on a coordination map. The rules of Section 101.103 rely on the highly directional nature of these microwave links to effect successful coordination.

[5] See Section 101.115.

In contrast, fixed operations at 4.9 GHz are much less directional in nature. The technical rules for 4.9 GHz have no minimum antenna gain or beamwidth requirements. Instead, the 4.9 GHz rules have a maximum antenna gain limit of 26 dB, which is 12 dB below the minimum gain typically allowed for fixed microwave links licensed and coordinated under Part 101 of the rules. A maximum gain of 26 dB corresponds to a minimum beamwidth of approximately 8 to10 degrees, so even point-to-point systems at 4.9 GHz will have a relatively wide beam. The 4.9 GHz technical rules also allow for fixed links with an omnidirectional antenna, i.e., 360 degree coverage. In summary, 4.9 GHz fixed links which are in compliance with the technical rules have very different characteristics than fixed microwave links coordinated under the provisions of Part 101 of the rules. Appendix A of these comments provides an example to illustrate this distinction.

Because the technical link characteristics at 4.9 GHz are radically different than those for Part 101 Microwave Services, different methods must be used to manage/coordinate spectrum usage. For coordination at 4.9 GHz, operations would need to be represented consistent with their service area. For example, an omnidirectional service area would be used in the case of point-to-multipoint operations and a relatively wide "sector" service area in the case of point-to-point systems. Given the variety of systems allowed, NPSTC recommends that the most appropriate way to assist public safety licensees in the selection and use of frequencies in the 4.9 GHz band is to have the NRPC, in conjunction with the RPC's, maintain a system of registering operations in the band.

Also, Section 101.103 (d) which the Commission proposes be used for 4.9 GHz includes some requirements that have not been defined in the context of allowable operations in the 4.9 GHz band. Specifically, Section 101.103 (d)(1) states (emphasis added):

101.103(d) (1) *General requirements.* Proposed frequency usage must be prior coordinated with existing licensees, permittees and applicants in the area, and other applicants with previously filed applications, whose facilities could affect or be affected by the new proposal in terms of frequency interference on active channels, applied-for channels, or channels coordinated for future growth. Coordination must be completed prior to filing an application for regular authorization, or a major amendment to a pending application, or any major modification to a license. In coordinating frequency usage with stations in the fixed satellite service, applicants must also comply with the requirements of §101.21(f). In engineering a system or modification thereto, the applicant must, by appropriate studies and analyses, select sites, transmitters, antennas and frequencies that will avoid interference in excess of permissible levels to other users. All applicants and licensees must cooperate fully and make reasonable efforts to resolve technical problems and conflicts that may inhibit the most effective and efficient use of the radio spectrum; however, the party being coordinated with is not obligated to suggest changes or re-engineer a proposal in cases involving conflicts. Applicants should make every reasonable effort to avoid blocking the growth of systems as prior coordinated. The applicant must identify in the application all entities with which the technical proposal was coordinated. In the event that technical problems are not resolved, an explanation must be submitted with the application. Where technical problems are resolved by an agreement or operating arrangement between the parties that would require special procedures be taken to reduce the likelihood of interference in excess of permissible levels (such as the use of artificial site shielding) or would result in a reduction of quality or capacity of either system, the details thereof may be contained in the application.

A "permissible level of interference" as referenced in this section of the rules is not defined for the 4.9 GHz band. Nor could it be easily defined given the variety of operations in the band. There are different types of equipment with different bandwidths being fielded in the band to accommodate fixed/mobile, point-to-multipoint and point-to-point operations, and the Commission's recent rule changes provide the opportunity for increased fixed use of the spectrum.

As also highlighted above, the provisions of paragraph 101.103(d)(1) allow an applicant to attach "an explanation" to the application in the event technical problems cannot be resolved. However, it is unclear what criteria will be applied to either accept or reject such an explanation. In any case, by the time such explanations are given an adequate technical review, the environment may have changed from that which existed when the applicant submitted the explanation. For example, a point-to-point system which a new applicant is trying to protect may have deployed additional remote sites. This could trigger the need for a new round of notifications, responses and explanations of additional unresolved issues and significantly dely public safety deployment. In short, these rules which are based on the deployment of relatively narrow beam point-to-point microwave systems are not a good fit for the 4.9 GHz public safety band.

A review of the Commission licensing records indicates that as of June 30, 2009, there are approximately 1800 licenses which have been issued in the 4.9 GHz band. Approximately 1600 of those licenses are area-wide and the remaining 200 are individual site-based authorizations. Therefore, it is impractical to implement a stringent coordination process at this late stage. Doing so would likely mean that no new applicants for permanent fixed links would "successfully complete" the coordination process.

Also, given that the primary use of the 4.9 GHz band is for broadband operations, even 50 MHz of spectrum is a minimal amount. In most areas, it is unlikely that any coordination scheme will actually eliminate overlap of systems. The most that could be accomplished is "best effort" coordination, i.e., a process that attemps to minimize overlap, but in no way can prevent it. There is simply not enough spectrum in the band to accommodate all public safety users with

no overlap. Therefore, NPSTC emphasizes that public safety licensees in the same area will need to work together to select and deploy 4.9 GHz channels. NPSTC believes that the increased cross-agency and cross-jurisdictional cooperation that has been engendered by the formation of UASI areas will help in this regard, especially in the major urban areas where spectrum congestion tends to be more acute.

A NPSTC representative held informal discussions with the NRPC recently and it appears that the NRPC, in conjunction with individual RPC's, is willing to assist with such a registration process. One concern that could arise with such a process is that a few of the 700 MHz RPC's are not yet active. Therefore, NPSTC analyzed the current 4.9 GHz licenses to determine the percentage of licensed service areas that fall within an active 700 MHz Regional Planning Committee territory. This analysis showed that 87% of the current licenses do fall within active RPC areas. Furthermore, NPSTC contends that areas without active 700 MHz RPC's are significantly less likely to experience spectrum shortages, since lack of an active RPC is normally attributed to less concern about spectrum shortages. Finally, in the event that there are public safety agencies who desire the benefits of registration but whose jurisdictions fall within an inactive regional planning area, those agencies could go directly to the NRPC for assistance.

Proposed 4.9 GHz Rule Corrections and Clarifications

In its Further Notice, the Commission also sets forth several rule corrections and clarifications for the 4.9 GHz band. These include 1) correction of the frequency table; 2) addition of a frequency coordination exemption that was inadvertently dropped in various rule changes, and 3) clarification of the channel centers to be used when applicants aggregate

channels, while grandfathering any existing licensees that have center different centers than those under the proposed clarification. NPSTC supports these corrections and clarifications.

Respectfully submitted,

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Appendix A

The figures below show the difference between a hypothetical Part 101 microwave link (i.e. 6GHz band) [Fig. 1a] and a hypothetical 4.9 GHz point-to-multipoint link [Fig. 1b], both deployed in New York City according to the current technical rules. Figure 1a shows a link which has been designed to be compliant with the Part 101 rules to connect a location from southern Manhattan (A) to the northern part of the island (B), with an antenna that has a minimum gain of 38dB and a beamwidth of 2 degrees. Figure 1b shows a 4.9GHz link which has been designed to be compliant with the applicable technical rules with a 16dB – 90 degree sector at point A and a 21dB – 10degree antenna at point B. Figure 1b also shows the addition of two other locations (C and D) that also can talk to point A in a point-multipoint fashion. It is clear from this picture that the Part 101 link has a very well defined, narrow path while the 4.9GHz service area covers most of Manhattan and well into the Bronx and New Jersey. Further, once a service area is defined (i.e. A-B) link, the addition of other links in a point-to-multipoint fashion (i.e. C and D) can be added without re-coordination.

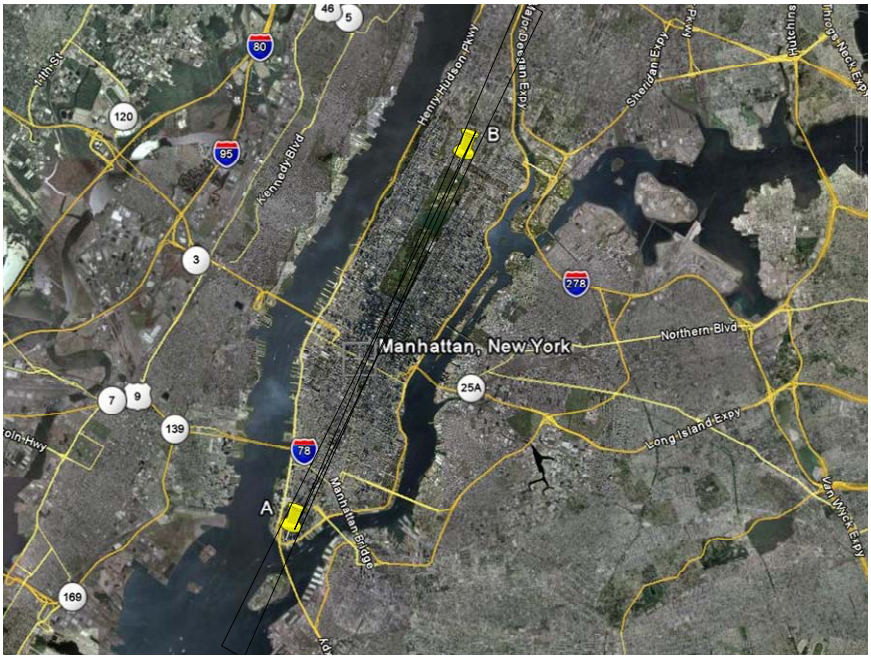

Fig. 1a – RF Footprint of a link compliant with Part 101 rules to connect points A and B in Manhattan. Note that the link can be represented as a near linear segment on the map.

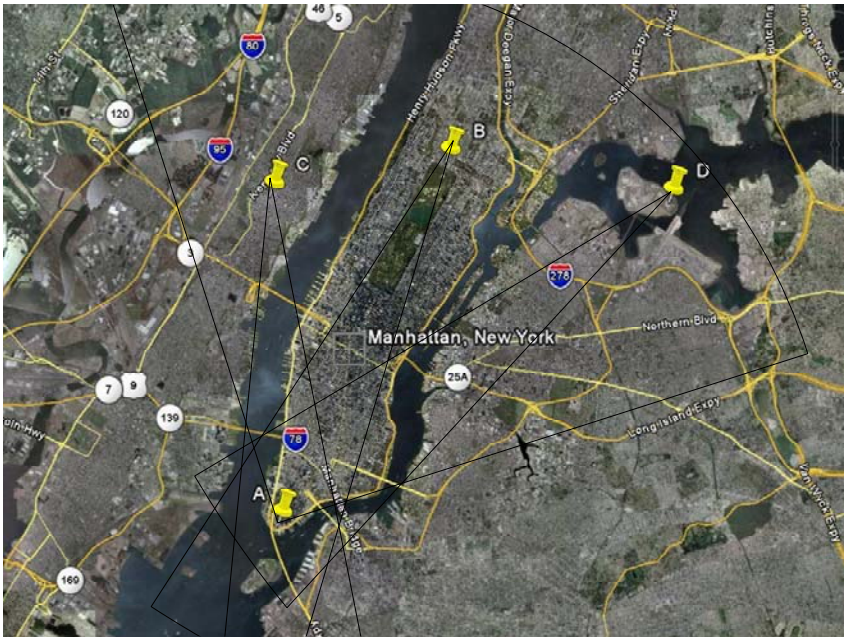

Fig. 1b – RF Footprint of a link compliant with 4.9GHz rules to connect points A and B in Manhattan. Note that the RF coverage of this link covers most of Manhattan and into NJ and the Bronx, thus covering a complete service area. Further, as 4.9GHz allows for point-multipoint links, other links can be added to site A with minimal increase interference footprint.